

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Junichiro MORIOKA

Serial No.: New Application

Filed: February 25, 2002

For: SENSOR SYSTEM FOR DISK DEVICE USING FLOATING HEAD

PRELIMINARY AMENDMENT

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application,  
please enter the following specification changes as noted  
below:

IN THE CLAIMS:

Please amend claims 3, 7 and 10 as follows:

3. (Amended) The sensor system for a disk device by  
using a floating head according to Claim 1, wherein the second  
actuator is disposed on a load beam of a head suspension.

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7. (Amended) The sensor system for a disk device by using a floating head according to Claim 5, wherein the second actuator is disposed on a load beam of a head suspension.

10. (Amended) The sensor system for a disk device by using a floating head according to Claim 8, wherein the second actuator is disposed on a load beam of a head suspension system.

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REMARKS

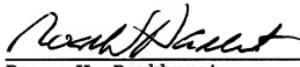
Claims 1-15, as amended, remain herein. Claims 3, 7 and 10 have been amended hereby.

This Preliminary Amendment is submitted to eliminate multiply dependent claims from the above-identified application.

Examination of this application on its merits is respectfully requested.

Respectfully submitted,  
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February 25, 2002  
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## CLAIMS

1. A sensor system for a disk device by using a floating head, comprising:

a rotating disk having a data recording area;

a head element that floats over the data recording area of the disk so as to write data thereon or read data therefrom;

a first actuator for moving the head element over the data recording area of the disk;

a second actuator being supported by the first actuator and supporting the head element for precise positioning thereof against the data recording area of the disk; and

a means for detecting any contact between the disk and the head element, by utilizing a signal generated by the second actuator when the disk contacts the head element during an operation of the disk.

2. The sensor system for a disk device by using a floating head according to Claim 1, wherein the second actuator is a piezoelectric element.

3. The sensor system for a disk device by using a floating head according to Claim 1 or ~~Claim 2~~, wherein the second actuator is disposed on a load beam of a head suspension.

4. A flying height testing method for a disk device by using a floating head, comprising:

the head element is retreated from a disk surface by the first actuator when the disk is not in operation, and the system further comprises a means for detecting a vibration disturbance by utilizing a signal generated by the second actuator due to this vibration disturbance, before the first actuator starts a loading operation of the head element onto the disk surface from a retreat position.

6. The sensor system for a disk device by using a floating head according to Claim 5, wherein the second actuator is a piezoelectric element.

7. The sensor system for a disk device by using a floating head according to Claim 5 or Claim 6, wherein the second actuator is disposed on a load beam of a head suspension.

8. A sensor system for a disk device by using a floating head, comprising:

a rotating disk having a data recording area;  
a head element that floats over the data recording area of the disk so as to write data thereon or read data therefrom;

a first actuator for moving the head element over the data recording area of the disk;

a second actuator supported by the first actuator and supporting the head element for precisely positioning the head element against the data recording area of the disk;

and

a means for canceling a resonance generated between the head element and the second actuator, by applying to the second actuator a signal having a phase opposite to that of a signal generated by the second actuator when the head element is floating.

9. The sensor system for a disk device by using a floating head according to Claim 8, wherein the second actuator is a piezoelectric element.

10. The sensor system for a disk device by using a floating head according to Claim 8 or ~~Claim 9~~, wherein the second actuator is disposed on a load beam of a head suspension system.

11. A sensor system for a disk device by using a floating head, including a single-plate servo writer, said servo writer comprising:

a head element that floats over a data recording area of a rotating disk so as to write servo information thereon or read servo information therefrom;

a first actuator for moving the head element over the data recording area of the disk;

a second actuator supported by the first actuator and supporting the head element for precisely positioning the head element against the data recording area of the disk;